Aluminum electrolytic capacitors

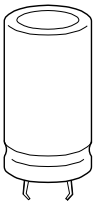
Snap-in capacitors

Series/Type: **B43540**

Date: December 2013

EPCOS AG is a TDK Group Company.

Long-life grade capacitors



Applications
- Frequency converters
- Solar inverters
- Uninterruptible power supplies
- Professional power supplies
- Medical appliances
- Telecommunications

Features
- Voltage derating ($0.93 \cdot V_R$) enables 105 °C operation, more details available upon request
- Base cooling available upon request for case sizes 30×35 mm to 35×55 mm
- Long useful life
- High reliability
- Outstanding ripple current capability
- Extremely improved performance at high frequencies
- Outstanding low ESR at operating conditions above 50 °C
- High CV product, compact
- Optimized internal thermal resistance
- Different case sizes available for each capacitance value
- Capacitors with all insulation versions pass the needle flame test according to IEC 60695-11-5 for all flame exposure times up to 120 s
- RoHS-compatible

Construction
- Charge/discharge-proof, polar
- Aluminum case, fully insulated with PVC
- Version with PET insulation available
- Version with additional PET insulation cap on terminal side available for insulating the capacitor from the PCB
- Snap-in solder pins to hold component in place on PC-board
- Minus pole marking on case surface
- Minus pole not insulated from case
- Overload protection by safety vent on the case wall

Terminals
- Standard version with 2 terminals, 2 lengths available: 6.3 and 4.5 mm
- 3 terminals to ensure correct insertion: length 4.5 mm

Specifications and characteristics in brief

Rated voltage V_R Surge voltage V_S	200 ... 450 V DC 1.15 · V_R (for $V_R \leq 250$ V DC) 1.10 · V_R (for $V_R \geq 400$ V DC)	
Rated capacitance C_R Capacitance tolerance	68 ... 2200 µF ±20% ≙ M	
Dissipation factor tan δ (20 °C, 120 Hz)	$V_R \leq 400$ V DC: tan δ ≤ 0.15 $V_R = 450$ V DC: tan δ ≤ 0.20	
Leakage current I_{leak} (5 min, 20 °C)	$I_{leak} \leq 0.3\ \mu A \cdot \left(\frac{C_R}{\mu F} \cdot \frac{V_R}{V}\right)^{0.7} + 4\ \mu A$	
Self-inductance ESL	Approx. 20 nH	
Useful life[1)] 85 °C; V_R; $I_{AC,R}$ 40 °C; V_R; 1.15 · $I_{AC,R}$	 > 10000 h > 250000 h	Requirements: ΔC/C ≤ ±20% of initial value tan δ ≤ 2 times initial specified limit I_{leak} ≤ initial specified limit
Voltage endurance test 85 °C; V_R	5000 h	Post test requirements: ΔC/C ≤ ±10% of initial value tan δ ≤ 1.3 times initial specified limit I_{leak} ≤ initial specified limit
Vibration resistance test	To IEC 60068-2-6, test Fc: Frequency range 10 Hz ... 55 Hz, displacement amplitude 0.35 mm, acceleration max. 5 *g*, duration 3 × 2 h. Capacitor mounted by its body which is rigidly clamped to the work surface.	
Characteristics at low temperature	Max. impedance ratio at 100 Hz	V_R ≤ 400 V: $Z_{-25\,°C} / Z_{20\,°C}$ = 3; $Z_{-40\,°C} / Z_{20\,°C}$ = 7 V_R = 450 V: $Z_{-25\,°C} / Z_{20\,°C}$ = 7; $Z_{-40\,°C} / Z_{20\,°C}$ = 12
IEC climatic category	To IEC 60068-1: $V_R \leq 400$ V DC: 40/085/56 (−40 °C/+85 °C/56 days damp heat test) $V_R = 450$ V DC: 25/085/56 (−25 °C/+85 °C/56 days damp heat test) The capacitors can be operated in the temperature range of −40 °C to +85 °C but the impedance at −40 °C should be taken into consideration.	
Detail specification Sectional specification	Similar to CECC 30301-811 IEC 60384-4	

1) Refer to chapter "General technical information, 5 Useful life" on how to interpret useful life.

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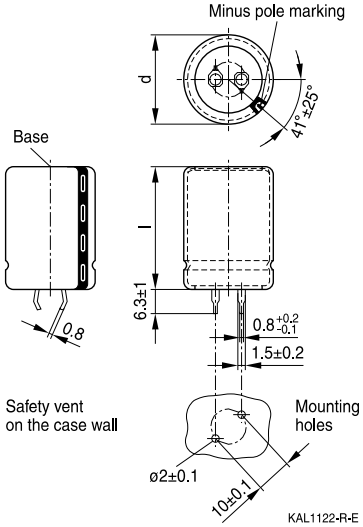
Outstanding ripple current – 85 °C

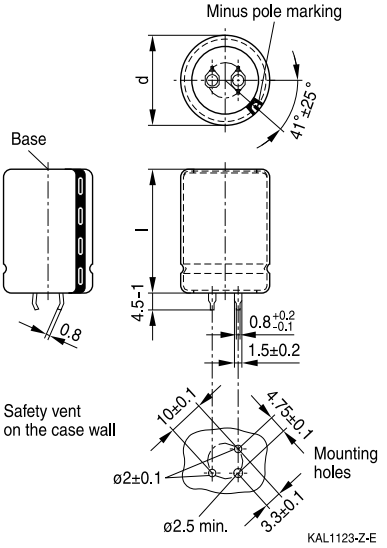
Dimensional drawings

Snap-in capacitors with standard insulation (PVC or PET)



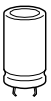
Snap-in terminals, length (6.3 ±1) mm. Also available in a shorter version with a length of (4.5 −1) mm. PET insulation is marked with label "PET" on the sleeve.

Dimensions (mm)		Approx.	Packing
d +1	l ±2	weight (g)	units (pcs.)
25	25	13	130
25	30	17	130
25	35	19	130
25	40	22	130
25	45	25	130
25	50	29	130
25	55	32	130

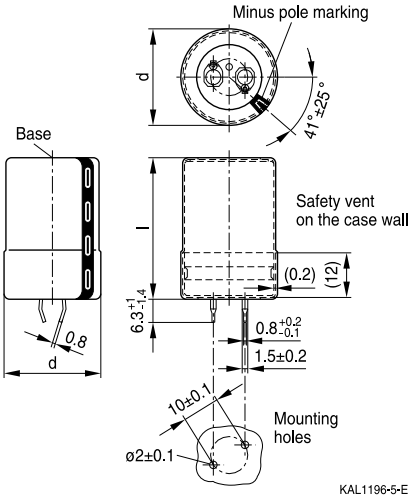


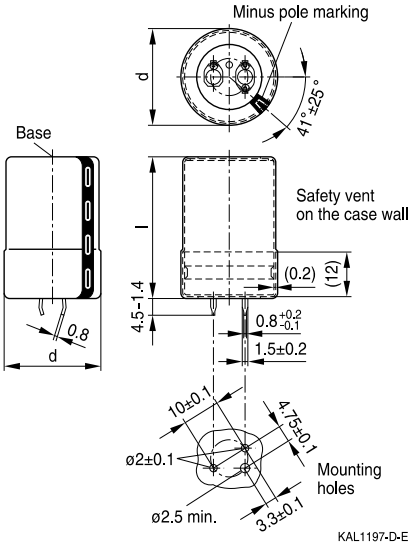
Snap-in capacitors are also available with 3 terminals (length (4.5 −1) mm). PET insulation is marked with label "PET" on the sleeve.

Dimensions (mm)		Approx.	Packing
d +1	l ±2	weight (g)	units (pcs.)
30	25	17	80
30	30	23	80
30	35	29	80
30	40	36	80
30	45	41	80
30	50	46	80
30	55	53	80
35	25	22	60
35	30	29	60
35	35	36	60
35	40	41	60
35	45	56	60
35	50	70	60
35	55	81	60



Snap-in capacitors with PVC insulation and PET insulation cap on terminal side





Snap-in terminals, length (6.3 +1/−1.4) mm. Also available in a shorter version with a length of (4.5 −1.4) mm. PET insulation cap is positioned under the insulation sleeve.

Dimensions (mm)		Approx.	Packing
d +1.4	l +2.2/−2	weight (g)	units (pcs.)
25	25	13	115
25	30	17	115
25	35	19	115
25	40	22	115
25	45	25	115
25	50	29	115
25	55	32	115

Snap-in capacitors are also available with 3 terminals (length (4.5 −1.4) mm). PET insulation cap is positioned under the insulation sleeve.

Dimensions (mm)		Approx.	Packing
d +1.4	l +2.2/−2	weight (g)	units (pcs.)
30	25	17	80
30	30	23	80
30	35	29	80
30	40	36	80
30	45	41	80
30	50	46	80
30	55	53	80
35	25	22	60
35	30	29	60
35	35	36	60
35	40	41	60
35	45	56	60
35	50	70	60
35	55	81	60

Packing of snap-in capacitors

For ecological reasons the packing is pure cardboard. Components can be withdrawn (in full or in part) in the correct position for insertion.

Ordering codes for terminal styles and insulation features

Identification in 3rd block of ordering code

Snap-in capacitors			
Terminal version	Insulation version		
	PVC	PET	PVC plus PET cap
Standard terminals 6.3 mm	M000	M060	M080
Short terminals 4.5 mm	M007	M067	M087
3 terminals 4.5 mm	M002	M062	M082

Ordering examples:

B43540A5107M007 } snap-in capacitor with short terminals and standard PVC insulation
B43540A5107M062 } snap-in capacitor with 3 terminals and PET insulation
B43540A5107M080 } snap-in capacitor with standard terminals and PVC insulation with additional PET insulation cap on terminal side

Overview of available types

V_R (V DC)	200	250	400	450
	Case dimensions d × l (mm)			
C_R (µF)				
68				25 × 25
82				25 × 30
100			25 × 25	25 × 30 30 × 25
120			25 × 30	25 × 35 30 × 30
150			25 × 35 30 × 25	25 × 35 30 × 30 35 × 25
180			25 × 40 30 × 30 35 × 25	25 × 45 30 × 35 35 × 30
220			25 × 40 30 × 30 35 × 30	25 × 50 30 × 40 35 × 30
270		25 × 25	25 × 45 30 × 35 35 × 30	25 × 55 30 × 40 35 × 35
330	25 × 25	25 × 30	25 × 55 30 × 45 35 × 35	30 × 50 35 × 40
390	25 × 30 30 × 25	25 × 35 30 × 25	30 × 45 35 × 35	30 × 55 35 × 45
470	25 × 30 30 × 25	25 × 35 30 × 30	30 × 50 35 × 45	35 × 50
560	25 × 35 30 × 30	25 × 40 30 × 30 35 × 25	35 × 50	35 × 55
680	25 × 40 30 × 30 35 × 25	25 × 45 30 × 35 35 × 30	35 × 55	
820	25 × 45 30 × 35 35 × 30	25 × 55 30 × 40 35 × 35		

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Outstanding ripple current – 85 °C

V_R (V DC)	200	250	400	450
	Case dimensions d × l (mm)			
C_R (µF)				
1000	25 × 50 30 × 40 35 × 35	30 × 45 35 × 35		
1200	30 × 45 35 × 35	30 × 55 35 × 40		
1500	30 × 50 35 × 40	35 × 50		
1800	35 × 45	35 × 55		
2200	35 × 55			

The capacitance and voltage ratings listed above are available in different cases upon request. Other voltage and capacitance ratings are also available upon request.

Technical data and ordering codes

C_R 100 Hz 20 °C µF	Case dimensions d × l mm	ESR_{typ} 100 Hz 20 °C mΩ	ESR_{typ} 300 Hz 60 °C mΩ	Z_{max} 10 kHz 20 °C mΩ	$I_{AC,max}$ 100 Hz 60 °C A	$I_{AC,R}$ [1] 100 Hz 85 °C A	Ordering code (composition see below)
V_R = 200 V DC							
330	25 × 25	270	110	340	3.11	1.59	B43540A2337M0*#
390	25 × 30	230	95	290	3.55	1.81	B43540A2397M0*#
390	30 × 25	220	80	270	3.69	1.88	B43540B2397M0*#
470	25 × 30	190	75	240	3.90	1.99	B43540A2477M0*#
470	30 × 25	180	70	230	4.05	2.06	B43540B2477M0*#
560	25 × 35	160	65	200	4.43	2.26	B43540A2567M0*#
560	30 × 30	150	55	190	4.62	2.36	B43540B2567M0*#
680	25 × 40	130	55	160	5.06	2.58	B43540A2687M0*#
680	30 × 30	120	45	160	5.10	2.60	B43540B2687M0*#
680	35 × 25	130	55	170	5.07	2.58	B43540C2687M0*#
820	25 × 45	110	45	140	5.73	2.92	B43540A2827M0*#
820	30 × 35	100	40	130	5.82	2.97	B43540B2827M0*#
820	35 × 30	110	45	140	6.32	3.22	B43540C2827M0*#
1000	25 × 50	90	36	110	6.51	3.32	B43540A2108M0*#
1000	30 × 40	85	32	110	7.24	3.69	B43540B2108M0*#
1000	35 × 35	90	38	110	7.26	3.70	B43540C2108M0*#
1200	30 × 45	70	26	90	8.18	4.17	B43540A2128M0*#
1200	35 × 35	75	32	100	7.95	4.05	B43540B2128M0*#
1500	30 × 50	55	22	70	9.41	4.80	B43540A2158M0*#
1500	35 × 40	60	24	75	9.20	4.69	B43540B2158M0*#
1800	35 × 45	50	20	65	10.3	5.30	B43540A2188M0*#
2200	35 × 55	40	17	50	12.10	6.17	B43540A2228M0*#
V_R = 250 V DC							
270	25 × 25	270	110	320	2.99	1.52	B43540E2277M0*#
330	25 × 30	220	90	260	3.46	1.76	B43540E2337M0*#
390	25 × 35	190	75	220	3.92	2.00	B43540E2397M0*#
390	30 × 25	180	65	210	3.91	1.99	B43540F2397M0*#
470	25 × 35	150	60	190	4.30	2.19	B43540E2477M0*#
470	30 × 30	150	55	180	4.49	2.29	B43540F2477M0*#
560	25 × 40	130	50	160	4.87	2.48	B43540E2567M0*#
560	30 × 30	120	45	150	4.90	2.50	B43540F2567M0*#
560	35 × 25	130	55	160	4.95	2.52	B43540G2567M0*#

Composition of ordering code

* = Insulation feature
- 0 = PVC insulation
- 6 = PET insulation
- 8 = PVC insulation with additional PET insulation cap on terminal side

\# = Terminal style
- 0 = snap-in standard terminals (6.3 mm)
- 2 = snap-in 3 terminals (4.5 mm)
- 7 = snap-in short terminals (4.5 mm)

1) 120-Hz conversion factor of ripple current: I_{AC} (120 Hz) = 1.03 · I_{AC} (100 Hz)

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Outstanding ripple current – 85 °C

Technical data and ordering codes

C_R 100 Hz 20 °C µF	Case dimensions d × l mm	ESR_{typ} 100 Hz 20 °C mΩ	ESR_{typ} 300 Hz 60 °C mΩ	Z_{max} 10 kHz 20 °C mΩ	$I_{AC,max}$ 100 Hz 60 °C A	$I_{AC,R}$ [2] 100 Hz 85 °C A	Ordering code (composition see below)
V_R = 250 V DC							
680	25 × 45	110	45	130	5.54	2.82	B43540E2687M0*#
680	30 × 35	100	40	120	5.62	2.87	B43540F2687M0*#
680	35 × 30	110	45	130	6.08	3.10	B43540G2687M0*#
820	25 × 55	90	36	110	6.42	3.27	B43540E2827M0*#
820	30 × 40	85	32	100	6.81	3.47	B43540F2827M0*#
820	35 × 35	90	36	110	6.93	3.54	B43540G2827M0*#
1000	30 × 45	70	26	85	7.76	3.96	B43540E2108M0*#
1000	35 × 35	75	30	90	7.66	3.90	B43540F2108M0*#
1200	30 × 55	60	22	70	8.97	4.58	B43540E2128M0*#
1200	35 × 40	60	26	75	8.68	4.43	B43540F2128M0*#
1500	35 × 50	50	20	60	10.2	5.25	B43540E2158M0*#
1800	35 × 55	40	17	50	11.5	5.89	B43540E2188M0*#
V_R = 400 V DC							
100	25 × 25	640	210	760	2.04	1.04	B43540A9107M0*#
120	25 × 30	510	170	600	2.34	1.19	B43540A9127M0*#
150	25 × 35	410	130	480	2.73	1.39	B43540A9157M0*#
150	30 × 25	420	130	490	2.72	1.39	B43540B9157M0*#
180	25 × 40	340	110	400	3.10	1.58	B43540A9187M0*#
180	30 × 30	330	110	390	3.12	1.59	B43540B9187M0*#
180	35 × 25	340	110	400	3.14	1.60	B43540C9187M0*#
220	25 × 40	290	100	340	3.43	1.75	B43540A9227M0*#
220	30 × 30	290	90	340	3.45	1.76	B43540B9227M0*#
220	35 × 30	280	95	330	3.86	1.97	B43540C9227M0*#
270	25 × 45	240	80	280	3.92	2.00	B43540A9277M0*#
270	30 × 35	230	75	270	3.98	2.03	B43540B9277M0*#
270	35 × 30	230	75	270	4.28	2.18	B43540C9277M0*#
330	25 × 55	190	65	230	4.58	2.33	B43540C9337M0*#
330	30 × 45	180	60	210	5.01	2.55	B43540A9337M0*#
330	35 × 35	190	60	220	4.92	2.51	B43540B9337M0*#
390	30 × 45	160	50	190	5.45	2.78	B43540A9397M0*#

Composition of ordering code

* = Insulation feature
- 0 = PVC insulation
- 6 = PET insulation
- 8 = PVC insulation with additional PET insulation cap on terminal side

\# = Terminal style
- 0 = snap-in standard terminals (6.3 mm)
- 2 = snap-in 3 terminals (4.5 mm)
- 7 = snap-in short terminals (4.5 mm)

2) 120-Hz conversion factor of ripple current: I_{AC} (120 Hz) = 1.03 · I_{AC} (100 Hz)

Technical data and ordering codes

C_R 100 Hz 20 °C µF	Case dimensions d × l mm	ESR_{typ} 100 Hz 20 °C mΩ	ESR_{typ} 300 Hz 60 °C mΩ	Z_{max} 10 kHz 20 °C mΩ	$I_{AC,max}$ 100 Hz 60 °C A	$I_{AC,R}$ [3] 100 Hz 85 °C A	Ordering code (composition see below)
V_R = 400 V DC							
390	35 × 35	160	55	190	5.35	2.72	B43540B9397M0*#
470	30 × 50	130	40	160	6.15	3.14	B43540A9477M0*#
470	35 × 45	130	45	150	6.26	3.19	B43540B9477M0*#
560	35 × 50	110	36	130	7.03	3.58	B43540A9567M0*#
680	35 × 55	95	32	110	7.94	4.05	B43540A9687M0*#
V_R = 450 V DC							
68	25 × 25	1420	370	2030	1.56	0.80	B43540A5686M0*#
82	25 × 30	1180	310	1680	1.80	0.92	B43540A5826M0*#
100	25 × 30	970	250	1380	1.99	1.01	B43540A5107M0*#
100	30 × 25	960	250	1370	2.07	1.05	B43540B5107M0*#
120	25 × 35	810	210	1150	2.27	1.16	B43540A5127M0*#
120	30 × 30	800	210	1140	2.37	1.21	B43540B5127M0*#
150	25 × 35	710	190	1030	2.54	1.29	B43540A5157M0*#
150	30 × 30	640	160	910	2.65	1.35	B43540B5157M0*#
150	35 × 25	650	170	920	2.67	1.36	B43540C5157M0*#
180	25 × 45	540	140	770	2.97	1.51	B43540A5187M0*#
180	30 × 35	530	140	760	3.02	1.54	B43540B5187M0*#
180	35 × 30	540	140	770	3.32	1.69	B43540C5187M0*#
220	25 × 50	440	120	630	3.38	1.72	B43540A5227M0*#
220	30 × 40	440	110	620	3.76	1.92	B43540B5227M0*#
220	35 × 30	440	120	630	3.68	1.87	B43540C5227M0*#
270	25 × 55	400	100	570	3.85	1.96	B43540C5277M0*#
270	30 × 40	390	100	570	4.17	2.12	B43540A5277M0*#
270	35 × 35	360	100	510	4.23	2.16	B43540B5277M0*#
330	30 × 50	290	75	410	4.89	2.49	B43540A5337M0*#
330	35 × 40	290	80	420	4.84	2.47	B43540B5337M0*#
390	30 × 55	270	70	390	5.45	2.78	B43540B5397M0*#
390	35 × 45	250	65	350	5.43	2.77	B43540A5397M0*#
470	35 × 50	210	55	290	6.17	3.15	B43540A5477M0*#
560	35 × 55	190	50	280	6.86	3.50	B43540A5567M0*#

Composition of ordering code

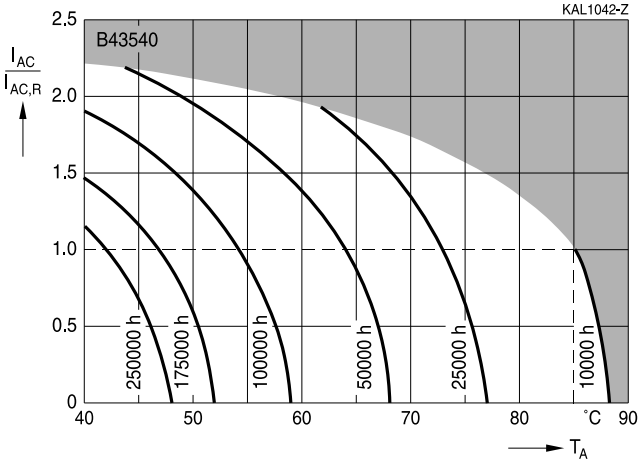
* = Insulation feature
- 0 = PVC insulation
- 6 = PET insulation
- 8 = PVC insulation with additional PET insulation cap on terminal side

\# = Terminal style
- 0 = snap-in standard terminals (6.3 mm)
- 2 = snap-in 3 terminals (4.5 mm)
- 7 = snap-in short terminals (4.5 mm)

3) 120-Hz conversion factor of ripple current: I_{AC} (120 Hz) = 1.03 · I_{AC} (100 Hz)

Useful life[1)]

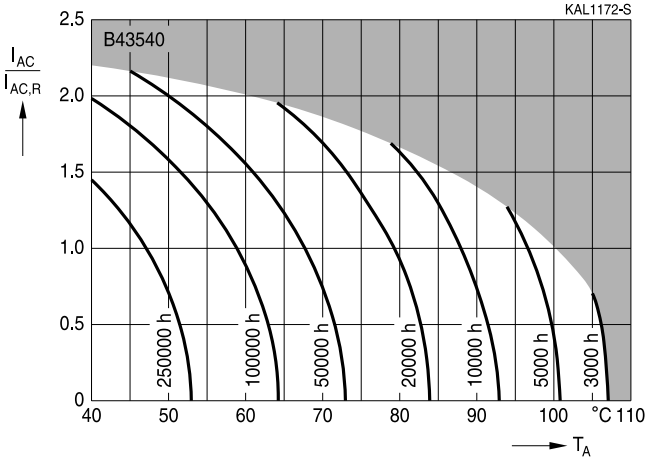
depending on ambient temperature T_A under ripple current operating conditions at V_R



Useful life[1)]

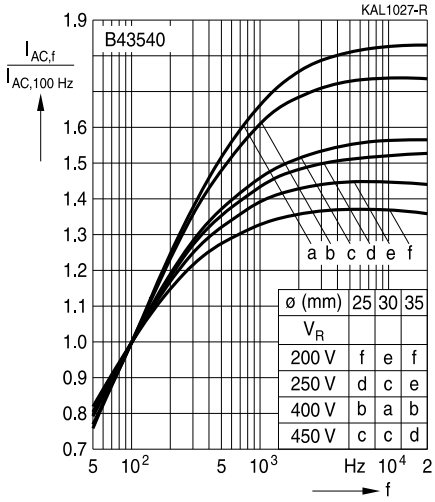
depending on ambient temperature T_A under ripple current operating conditions at V_{op}

$V_{op} \leq 0.93 \cdot V_R$



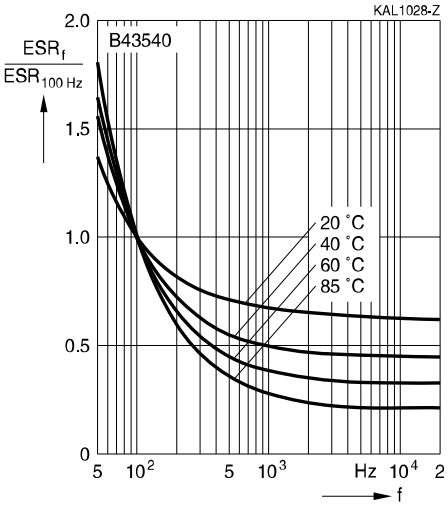
1) Refer to chapter "General technical information, 5 Useful life" on how to interpret useful life.

Frequency factor of permissible ripple current I_{AC} versus frequency f



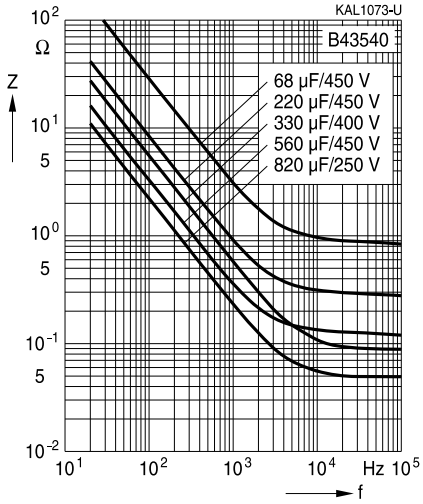
Frequency characteristics of ESR

Typical behavior



Impedance Z versus frequency f

Typical behavior at 20 °C



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Outstanding ripple current – 85 °C

Cautions and warnings

Personal safety

The electrolytes used by EPCOS have been optimized both with a view to the intended application and with regard to health and environmental compatibility. They do not contain any solvents that are detrimental to health, e.g. dimethyl formamide (DMF) or dimethyl acetamide (DMAC).
Furthermore, some of the high-voltage electrolytes used by EPCOS are self-extinguishing.

As far as possible, EPCOS does not use any dangerous chemicals or compounds to produce operating electrolytes. However, in exceptional cases, such materials must be used in order to achieve specific physical and electrical properties because no alternative materials are currently known. However, the amount of dangerous materials used in our products is limited to an absolute minimum.

Materials and chemicals used in EPCOS aluminum electrolytic capacitors are continuously adapted in compliance with the EPCOS Corporate Environmental Policy and the latest EU regulations and guidelines such as RoHS, REACH/SVHC, GADSL, and ELV.

MDS (Material Data Sheets) are available on the EPCOS website for all types listed in the data book. MDS for customer specific capacitors are available upon request.
MSDS (Material Safety Data Sheets) are available for all of our electrolytes upon request.

Nevertheless, the following rules should be observed when handling aluminum electrolytic capacitors: No electrolyte should come into contact with eyes or skin. If electrolyte does come into contact with the skin, wash the affected areas immediately with running water. If the eyes are affected, rinse them for 10 minutes with plenty of water. If symptoms persist, seek medical treatment. Avoid inhaling electrolyte vapor or mists. Workplaces and other affected areas should be well ventilated. Clothing that has been contaminated by electrolyte must be changed and rinsed in water.

Product safety

The table below summarizes the safety instructions that must be observed without fail. A detailed description can be found in the relevant sections of chapter "General technical information".

Topic	Safety information	Reference chapter "General technical information"
Polarity	Make sure that polar capacitors are connected with the right polarity.	1 "Basic construction of aluminum electrolytic capacitors"
Reverse voltage	Voltages polarity classes should be prevented by connecting a diode.	3.1.6 "Reverse voltage"
Mounting position of screw-terminal capacitors	Do not mount the capacitor with the terminals (safety vent) upside down.	11.1. "Mounting positions of capacitors with screw terminals"
Robustness of terminals	The following maximum tightening torques must not be exceeded when connecting screw terminals: M5: 2.5 Nm M6: 4.0 Nm	11.3 "Mounting torques"
Mounting of single-ended capacitors	The internal structure of single-ended capacitors might be damaged if excessive force is applied to the lead wires. Avoid any compressive, tensile or flexural stress. Do not move the capacitor after soldering to PC board. Do not pick up the PC board by the soldered capacitor. Do not insert the capacitor on the PC board with a hole space different to the lead space specified.	11.4 "Mounting considerations for single-ended capacitors"
Soldering	Do not exceed the specified time or temperature limits during soldering.	11.5 "Soldering"
Soldering, cleaning agents	Do not allow halogenated hydrocarbons to come into contact with aluminum electrolytic capacitors.	11.6 "Cleaning agents"
Upper category temperature	Do not exceed the upper category temperature.	7.2 "Maximum permissible operating temperature"
Passive flammability	Avoid external energy, such as fire or electricity.	8.1 "Passive flammability"

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Outstanding ripple current – 85 °C

Topic	Safety information	Reference chapter "General technical information"
Active flammability	Avoid overload of the capacitors.	8.2 "Active flammability"
Maintenance	Make periodic inspections of the capacitors. Before the inspection, make sure that the power supply is turned off and carefully discharge the electricity of the capacitors. Do not apply any mechanical stress to the capacitor terminals.	10 "Maintenance"
Storage	Do not store capacitors at high temperatures or high humidity. Capacitors should be stored at +5 to +35 °C and a relative humidity of ≤ 75%.	7.3 Storage conditions
		Reference chapter "Capacitors with screw terminals"
Breakdown strength of insulating sleeves	Do not damage the insulating sleeve, especially when ring clips are used for mounting.	"Screw terminals – accessories"

Symbols and terms

Symbol	English	German
C	Capacitance	Kapazität
C_R	Rated capacitance	Nennkapazität
C_S	Series capacitance	Serienkapazität
$C_{S,T}$	Series capacitance at temperature T	Serienkapazität bei Temperatur T
C_f	Capacitance at frequency f	Kapazität bei Frequenz f
d	Case diameter, nominal dimension	Gehäusedurchmesser, Nennmaß
d_{max}	Maximum case diameter	Maximaler Gehäusedurchmesser
ESL	Self-inductance	Eigeninduktivität
ESR	Equivalent series resistance	Ersatzserienwiderstand
ESR_f	Equivalent series resistance at frequency f	Ersatzserienwiderstand bei Frequenz f
ESR_T	Equivalent series resistance at temperature T	Ersatzserienwiderstand bei Temperatur T
f	Frequency	Frequenz
I	Current	Strom
I_{AC}	Alternating current (ripple current)	Wechselstrom
$I_{AC,rms}$	Root-mean-square value of alternating current	Wechselstrom, Effektivwert
$I_{AC,f}$	Ripple current at frequency f	Wechselstrom bei Frequenz f
$I_{AC,max}$	Maximum permissible ripple current	Maximal zulässiger Wechselstrom
$I_{AC,R}$	Rated ripple current	Nennwechselstrom
$I_{AC,R}$ (B)	Rated ripple current for base cooling	Nennwechselstromstrom für Bodenkühlung
I_{leak}	Leakage current	Reststrom
$I_{leak,op}$	Operating leakage current	Betriebsreststrom
l	Case length, nominal dimension	Gehäuselänge, Nennmaß
l_{max}	Maximum case length (without terminals and mounting stud)	Maximale Gehäuselänge (ohne Anschlüsse und Gewindebolzen)
R	Resistance	Widerstand
R_{ins}	Insulation resistance	Isolationswiderstand
R_{symm}	Balancing resistance	Symmetrierwiderstand
T	Temperature	Temperatur
ΔT	Temperature difference	Temperaturdifferenz
T_A	Ambient temperature	Umgebungstemperatur
T_C	Case temperature	Gehäusetemperatur
T_B	Capacitor base temperature	Temperatur des Becherbodens
t	Time	Zeit
Δt	Period	Zeitraum
t_b	Service life (operating hours)	Brauchbarkeitsdauer (Betriebszeit)

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Outstanding ripple current – 85 °C

Symbol	English	German
V	Voltage	Spannung
V_F	Forming voltage	Formierspannung
V_{op}	Operating voltage	Betriebsspannung
V_R	Rated voltage, DC voltage	Nennspannung, Gleichspannung
V_S	Surge voltage	Spitzenspannung
X_C	Capacitive reactance	Kapazitiver Blindwiderstand
X_L	Inductive reactance	Induktiver Blindwiderstand
Z	Impedance	Scheinwiderstand
Z_T	Impedance at temperature T	Scheinwiderstand bei Temperatur T
tan δ	Dissipation factor	Verlustfaktor
λ	Failure rate	Ausfallrate
ε_0	Absolute permittivity	Elektrische Feldkonstante
ε_r	Relative permittivity	Dielektrizitätszahl
ω	Angular velocity; $2 \cdot \pi \cdot f$	Kreisfrequenz; $2 \cdot \pi \cdot f$

Note

All dimensions are given in mm.

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